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Are Pesticides Safe?



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Pesticides, when used properly, can improve the quality of our lives in many ways. Their use in and around homes, gardens, and certain commercial establishments has brought us economic, health, and aesthetic benefits. In addition, pesticides are useful in protecting farms, forests and orchards to help ensure abundant production of food and fiber. On the other hand, pesticides are poisons and can adversely affect our lives when used indiscriminately and without care. They may threaten the health of those who use them as well as others who may be indirectly exposed.

Federal and State governments are responsible for protecting man and his environment from the harmful effects of pesticides. The machinery necessary to meet this responsibility is provided by Federal and State pesticide laws. The federal law is known as the Federal Insecticide, Fungicide, and Rodenticide Act, and is administered by the U.S. Environmental Protection Agency (EPA). State governments protect us through respective State pesticide laws usually administered through the State Departments of Agriculture. The specific tools or processes used by the agencies to insure the safety of pesticides include: the registration and reregistration process; the process for cancellation and suspension; the Rebuttable Presumption Against Registration (RPAR) process; the classification of pesticides; and the certification of pesticide applicators.

An important regulatory tool is the registration process. Safety data required to support registration is massive and may take more than 10 years

to accumulate before a product is permitted to be used. The information needed for registration falls into three major areas: General Chemistry, Environmental and Special Chemistry, and Product Hazard.

General Chemistry pertains to the identity of the active ingredient. Requirements for this type of information call for data about basic manufacturing processes, analytical methods, purity, and physical and chemical properties such as color, melting points, and solubilities. This basic information must be supplemented with safety data.

Environmental and Special Chemistry studies are needed to determine what happens to a pesticide once it enters the environment. For example, metabolism data is needed to understand the effects of microbes on pesticides, and vice versa. Degradation studies are used to determine the rate of decomposition and to identify residues which are formed through the action of sunlight or water on a product; mobility studies, such as leaching, volatility, absorption/desorption, and water dispersal, are used to trace movement of pesticide in the air, water, soils and even in living organisms. Any suggestion of a deleterious or harmful nature results in denial of registration.

Product hazard information is just as important. It is collected by conducting short (acute) and long term (chronic) laboratory and field studies.

Acute toxicity studies are conducted on test animals by exposing the animals to varying amounts of active ingredient and measuring the concentration needed to kill a percentage of the animals in a given period of time. These short term

studies are conducted using various routes of exposure including oral, dermal, inhalation, and ocular.

Chronic information is collected by feeding test animals minute quantities of the active ingredient over extended periods of time. The test animals then are sacrificed for histological (cells) and pathological (organs) examinations to determine whether the chemical causes such things as tumors, cancer, or chromosome damage. In addition, reproductive studies are done to find out what the chemical's effect is on the fetus and off-spring of exposed animals.

Only after evaluating all of the above data, and after considering intended use patterns and after confirming such use will not threaten man, domestic animals, and other non-target organisms such as birds, fish, bees, and aquatic invertebrates, will EPA permit a chemical to be used as a pesticide.

Cancellation and suspension is another important regulatory tool. Once registered, if a pesticide is determined to have unreasonable adverse effects on man or the environment, its registration is cancelled. Because it may take considerable time to cancel or remove a pesticide from the market the administrator of EPA is required to immediately suspend the use of any chemical he considers to pose an imminent hazard.

EPA does not wait for unreasonable effects or imminent hazards to develop before taking action. If a pesticide product displays any one of several well defined risk factors, he presumes the pesticide to be hazardous and takes action to cancel the registration. However, the pesticide manufacturer and other interested parties may rebut EPA's

presumptions. This is known as the Rebuttable Presumption Against Registration process (RPAR) and leads to in-depth scientific review all known risks and benefits associated with a product's continued use. Unsuccessful rebuttal leads to cancellation or other restrictions.

Then there is the pesticide label. EPA determines from a product's proposed use patterns the likelihood of exposure to humans, domestic animals, Wildlife, and aquatic organisms. The exposure information, together with safety data, is developed into label language providing restrictions for use to certified applicators; directions for using specific protective clothing and equipment; rates and methods of application; limitations to specific sites, and other precautions needed to reduce risk to all of the components of the environment.

Finally, using pesticides in a manner inconsistent with label instructions is a violation of Federal and State laws and can result in fines and imprisonment. States have primary responsibility for enforcing Federal and State pesticide laws.

In summary, federal and state regulatory agencies are responsible for protecting man and the environment against the harmful effects of pesticides. They meet their responsibilities by ensuring, through elaborate review systems, that pesticides considered to have unreasonable adverse effects are not available for use. This activity is reinforced by the threat of law which provides for criminal and civil penalties for those who would use pesticides in a harmful way.

It is important to understand that the word

"SAFE" is relative and that no one can guarantee absolute safety in any situation. There is some risk associated with any activity whether it be driving a car, walking to work, or preserving our food. However, the seriousness of the risk can be determined from past experience and careful review and consideration of all available scientific evidence. If experience and/or evidence suggest the risk too great for a particular pesticide, its use would not be permitted nor available for our consideration.

This pamphlet was prepared as a cooperative effort between the USDA Gypsy Moth Steering Committee and the U.S. Environmental Protection Agency.

It is intended to serve as an information aid for gypsy moth suppression programs in the Northeast.

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